

What is claimed is:

1. An apparatus for protecting a fuel cell which generates electricity by supplying as reaction gases hydrogen to an anode and oxygen to a cathode for an electrochemical reaction, the apparatus comprising:
a hydrogen sensor for detecting hydrogen in off-gas discharged from the cathode;
an operating state detecting unit for detecting an operating state of the fuel cell;
a memory unit for storing a determination threshold value corresponding to a detection value of the hydrogen sensor which is set according to the operating state of the fuel cell;
an abnormal state determining unit for comparing a detection value outputted from the hydrogen sensor and the determination threshold value obtained from the storing unit according to the operating state of the fuel cell outputted from the operating state detecting unit and determining whether or not the fuel cell is in abnormal state according to a result of the comparison; and
a protecting unit for changing the operating state of the fuel cell according to a result of the determination by the abnormal state determining unit.

2. An apparatus for protecting a fuel cell as set

forth in Claim 1, wherein the protecting unit reduces at least one of the difference in pressure between the reaction gases at the anode and the cathode, supply pressure of the reaction gases, supply flow rate of the reaction gases and generated current of the fuel cell.

3. An apparatus for protecting a fuel cell as set forth in Claim 1, wherein the operating state detecting unit includes at least one of a pressure detector for detecting the pressure of the reaction gases supplied to the anode and the cathode, a flow rate detector for detecting the flow rate of the reaction gases supplied to the anode and the cathode, a current controller for detecting generated current of the fuel cell.

4. A method for protecting a fuel cell which generates electricity by supplying as reaction gases hydrogen to an anode and oxygen to a cathode for electrochemical reaction, the method comprising:
detecting hydrogen in off-gas discharged from the cathode;
detecting an operating state of the fuel cell;
comparing a detection value of the hydrogen in the off-gas and a determination threshold value according to the detected operating state of the fuel cell;

determining whether or not the fuel cell is in abnormal state according to a result of the comparison; and

changing the operating state of the fuel cell according to a result of the abnormal state determination.

5. A method for protecting a fuel cell as set forth in Claim 4, wherein the operating state changing step includes reducing at least one of the difference in pressure between the reaction gases at the anode and the cathode, supply pressure of the reaction gases, supply flow rate of the reaction gases and generated current of the fuel cell.

6. A method for protecting a fuel cell as set forth in Claim 4, wherein the operating state detecting step includes detecting at least one of the pressure of the reaction gases supplied to the anode and the cathode, the flow rate of the reaction gases supplied to the anode and the cathode, and generated current of the fuel cell.